# MELITTIN AS A THERAPEUTIC OPTION IN UVEITIS TREATMENT

**CASTRO, B.F.M.[1];** da SILVA, C.N.[1]; CENACHI, S.P.F.[2]; VASCONCELOS-SANTOS, D.V.[2]; HENEINE, L.G.D.[3]; SILVA-CUNHA, A.[1]; FIALHO, S.L.[3]

1 Faculty of Pharmacy, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil.
2 Faculty of Medicine, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil.
3 Research and Development, Ezequiel Dias Foundation, Belo Horizonte, Brazil.

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## Aim

To assess the therapeutic application of intravitreal melittin (MEL), a peptide purified from bee venom, in the treatment of intraocular inflammation.

## Methodology

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|---|---|---|
| Safety | *In vitro* (ARPE-19 cells) | Cell Viability (MTT) |
| | *In vivo* (intravitreal injection in Wistar rats) | Intraocular pressure (IOP) electroretinogram (ERG) histology |
| Efficacy | Antiangiogenic effect | Chick embryo chorioallantoic membrane (CAM) |
| | Anti-inflammatory effect | BCG-induced uveitis in rats |

## Results

The toxicity evaluation in ARPE-19 cells showed no significant reduction in cell viability for concentrations lower than 2 µg/mL.

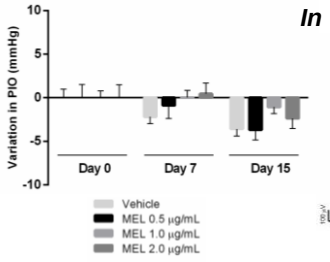
The intravitreal administration of MEL in rats confirmed its safety for the concentrations of 0.5, 1 and 2 µg/mL.

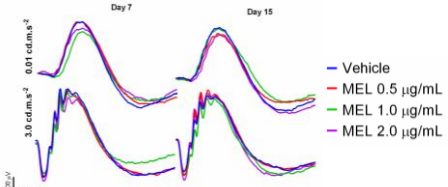
The same doses presented antiangiogenic activity in CAM, with an effect similar to bevacizumab for MEL 2 µg/mL.

Intravitreal MEL was able to ameliorate clinical and histopathological signs of inflammation in rats with BCG-induced uveitis. This was confirmed by the reduction in pro-inflammatory cytokines levels, determined in the posterior segment of the animals.

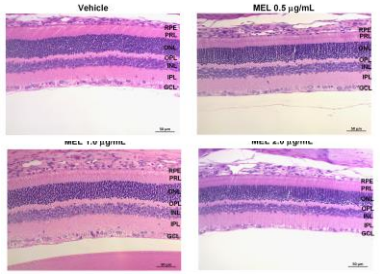
## Safety

### *In vivo* (PIO, ERG and Histology)

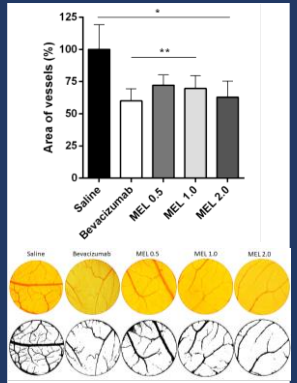



There were no significant differences in amplitudes and implicit-time compared to vehicle group for all MEL concentrations

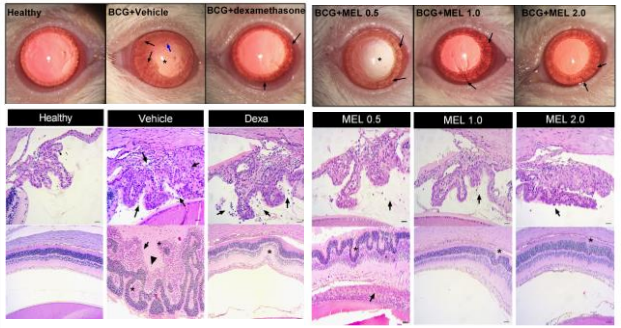


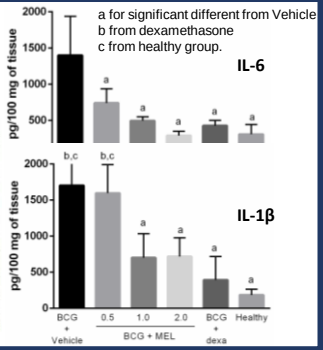

## Antiangiogenic




* For significant differences from control and ** for significant differences from bevacizumab

## Anti-inflammatory




**Conclusion:** This data reports the safety profile of MEL for intraocular administration and its therapeutic potential as anti-inflammatory and antiangiogenic agent in ocular diseases, especially uveitis.

**Acknowledgements:**

References: CASTRO, B. F. M. et al. Intravitreal thalidomide ameliorates inflammation in a model of experimental uveitis induced by BCG. *International Immunopharmacology*, v. 81, p. 1-9, 2020; LEE, G.; BAE, H. Anti-inflammatory applications of melittin, a major component of bee venom: Detailed mechanism of action and adverse effects. *Molecules*, v. 21, n. 5, p. 616, 2016.